CLAIMS

What is claimed is:

1. A strain control device comprising:

a body having a first end and a second end;

a first opening defined in the first end;

a second opening defined in the second end;

at least one cavity formed in a surface of the body extending between the first and second openings, a periphery of the cavity being at least partially defined by a first wall and a second opposing wall which laterally deviates from the first wall.

2. The strain control device of claim 1, wherein the first wall is configured as a substantially linear wall.

3. The strain control device of claim 1, wherein the at least one cavity includes multiple cavities arranged in a longitudinally extending end to end pattern including at least a first cavity and a second cavity, wherein the second cavity is configured as a reverse image of the first cavity with respect to a longitudinal centerline passing through the first and second openings and wherein at least another opening is positioned between the first and second cavities.

4. The strain control device of claim 3, wherein the first, second and at least another openings are configured as substantially C-shaped openings in transverse cross-section.

5. The strain control device of claim 4, further comprising a cover sized and configured to cooperatively mate with the body such that the multiple cavities are substantially concealed.

6. The strain control device of claim 5, wherein the cover is configured to thermally insulate the cavities.

7. The strain control device of claim 6, wherein the cover is formed from a material including an aramid fiber.

8. The strain control device of claim 7, wherein the body is formed of a material including nitrile rubber.

9. The strain control device of claim 1, wherein the body is formed of a material

including nitrile rubber.

10. The strain control device of claim 1, wherein the body is formed of a material including neoprene.

11. The strain control device of claim 1, wherein the body is formed of a material which includes silica.

12. The strain control device of claim 1, wherein the body is formed of a material which includes a plurality of reinforcing fibers.

13. The strain control device of claim 1, wherein the body is formed of a material which includes microballoons.

14. The strain control device of claim 1, wherein the body is formed of a material which varies in density between a first portion of the body and a second portion of the body.

15. The strain control device of claim 1, wherein the body is a molded component.

16. The strain control device of claim 1, wherein the body is an extruded component.

17. The strain control device of claim 1, further comprising an adapter including an annular body having a first inner radius and second larger outer radius, wherein the second radius is sized and configured to cooperatively contact an inner wall of at least one of the first and second openings.

18. The strain control device of claim 1, wherein the second wall includes at least a portion which exhibits a substantially constant radius.

19. The strain control device of claim 1, further including a curved surface transition from the first and second walls to a base of the at least one cavity.

20. The strain control device of claim 1, wherein the first and second openings are sized and configured to receive and frictionally grasp a transmission line to be disposed therethrough.

21. The strain control device of claim 1, wherein the body is configured to elongate and contract, at least in a direction taken between the first and second openings.

22 A strain control device comprising:
a body having a first end and a second end;
a first plurality of openings defined in the first end;
a second plurality of openings defined in the second end;
at least a first plurality of cavities formed in a surface of the body, each cavity of the plurality extending between an opening of the first plurality of openings and an opening of the second plurality of openings, each of the at least a first plurality of cavities having a periphery which is at least partially defined by a first wall and a second opposing wall which deviates from the first wall.

23. The strain control device of claim 22, wherein the first wall comprises a substantially linear wall.

24. The strain control device of claim 22, further comprising a second plurality of cavities and a third plurality of openings, wherein each cavity of the second plurality of cavities includes a periphery having a third wall and a fourth opposing wall which deviates from the third wall, each cavity of the second plurality being adjacent to a cavity of the at least a first plurality of cavities arranged in a longitudinally extending end to end pattern, and wherein each of the third plurality of openings is disposed between a one of the at least a first plurality of cavities and an adjacent one of the second plurality of cavities.

25 The strain control device of claim 22, further comprising a cover configured to cooperatively mate with the body and substantially conceal the plurality of cavities.

26 The strain control device of claim 22, wherein the cover is formed of a first material and the body is formed of a second different material.

27 The strain control device of claim 22, wherein each of the first and second pluralities of openings are configured as substantially C-shaped openings.

28. The strain control device of claim 22, wherein body is formed of a material comprising nitrile rubber.

29. The strain control device of claim 22, wherein the body is formed of a material comprising neoprene.

30. The strain control device of claim 22, wherein the second wall of each of the plurality of cavities includes at least a portion which exhibits a substantially constant radius.

31. The strain control device of claim 22, wherein each of the first and second pluralities of openings are sized configured to receive and frictionally grasp a transmission line passing therethrough.

32. The strain control device of claim 22, wherein the body is configured to elongate and contract at least in a direction taken between the first and second openings.

33. A strain control device comprising:
a body having a first end and a second end;
at least one cavity formed within a surface of the body between the first end and the second end, the cavity configured to receive at least a portion of a transmission line therein and wherein the cavity defines a deviation path for the at least a portion of the transmission line.

34. The strain control device of claim 33, wherein the cavity is at least partially defined by a first substantially linear boundary and a second opposing boundary which deviates from the first substantially linear boundary.

35. The strain control device of claim 34, wherein the second opposing boundary includes at least a portion which exhibits a substantially constant radius.

36. The strain control device of claim 35, further comprising a first opening formed in the body at a first end of the cavity and a second opening formed in the body at a second end of the cavity.

37. The strain control device of claim 36, wherein the first and second openings are configured to frictionally grasp the transmission line.

38. The strain control device of claim 37, wherein the body is configured to elongate and contract at least in a direction taken substantially linearly between the first and second

openings.

39. The strain control device of claim 37, wherein the deviation path is defined to allow displacement of the at least a portion of the transmission line towards the first substantially linear boundary upon the elongation of the body.

40. The strain control device of claim 38, wherein the deviation path is defined to allow displacement of the at least a portion of the transmission line towards the second opposing boundary upon the contraction of the body

41. A rocket motor comprising:

a rocket casing;

at least one body attached to a surface of the rocket casing, the body having a first end and a second end;

a first opening defined in the first end of the at least one body

a second opening defined in the second end of the at least one body;

at least one cavity formed in a surface of the at least one body, the at least one cavity extending between the first and second openings, a periphery of the cavity being at least partially defined by a first substantially linear wall and a second opposing wall which deviates from the first linear wall.

42. The rocket motor of claim 41, further comprising a transmission line disposed within the at least one cavity and extending through the first and second openings.

43. The rocket motor of claim 42, wherein the transmission line arranged within the cavity such that it is displaced from both the first and second walls while the at least one body is in a state exhibiting no strain.

44. The rocket motor of claim 43, wherein the first and second openings are sized and configured to frictionally grasp the transmission line.

45. A strain control device comprising:

a body having first grasping member configured to frictionally engage a first portion of a transmission line and a second grasping member configured to frictionally engage a second portion of the transmission line;

at least one cavity defined in the body between the first grasping member and the second grasping member, the cavity being configured to accommodate a third portion of the transmission line therein and defining a deviation path for the third portion of the transmission line.

46. The strain control device of claim 43, wherein the at least one cavity is at least partially defined by a first substantially linear wall and a second opposing wall which deviates from the first substantially linear wall.

47. A method of controlling strain in a transmission line, the method comprising:
providing a body;
forming an first opening in a first end of the body;
forming a second opening in a second end of the body;
forming at least one cavity in a surface of the body disposed between the first and second openings;
defining the cavity with peripheral boundary which includes a first wall and a second opposing wall which deviates from the first wall;
positioning a transmission line within the at least one cavity such that it extends from the first opening, through the cavity and through the second opening.

48. The method according to claim 47, further comprising sizing and configuring the first and second openings to frictionally grasp the transmission lines as it extends therethrough.

49. The method according to claim 48, wherein the positioning a transmission line within the at least one cavity includes position at least a portion of the transmission line substantially midway between the first wall and the second wall with the body being in an unstrained state.

50. The method according to claim, 49, further comprising subjecting the body to a strain inducing force and causing displacement of the at least a portion of transmission line toward the peripheral boundary of the cavity.

51. A method of controlling strain in a transmission line, the method comprising:
providing a body having a first grasping member and a second grasping member;

forming at least one cavity in the body in communication with the first and second grasping member, the at least one cavity being configured to provide a deviation path to the transmission line;

frictionally engaging a first portion of the transmission line with the first grasping member;

frictionally engaging a second portion of the transmission line with the second grasping member;

disposing a third portion of the transmission line within the at least one cavity.

52. A method of forming a strain control device, the method comprising:

providing a body;

forming a first opening in a first end of the body;

forming a second opening in a second end of the body; and

forming at least one cavity in a surface of the body disposed between the first and second openings.

53. The method according to claim 52, further comprising defining the at least one cavity to include a peripheral boundary having a first substantially linear wall and a second opposing wall which deviates from the linear wall.

54. The method according to claim 53, wherein providing a body, forming a first opening, forming a second opening and forming a cavity includes molding a body having a first and second opening and at least one cavity.

55. The method according to claim 53, further comprising sizing and configuring the first and second openings to receive and frictionally grasp a transmission line to be positioned therethrough.

56. The method according to claim 53, wherein providing a body includes forming the body of a material comprising nitrile rubber.

56. The method according to claim 53, wherein the providing a body includes forming the body of a material comprising neoprene.

57. The method according to claim 53, wherein the providing a body includes providing a body formed of a thermally insulative material.

58. A strain control device comprising:

a body having a plurality of body sections arranged in a longitudinally extending pattern, each body section including:

at least one cavity formed therein, the cavity having a periphery defined at least partially by a first wall and a second opposing wall which deviates laterally from the first wall, and

at least one grasping member configured to receive and frictionally grasp a transmission line to be installed therein.

59. A strain control device comprising:

a body having a first plurality of cavities arranged in a longitudinally extending pattern; and

a first plurality of grasping members, wherein at least one grasping member of the plurality is disposed between each two adjacent cavities of the first plurality of cavities

60. The strain control device of claim 59, further comprising at least a second plurality of cavities arranged in longitudinally extending pattern and a second plurality of grasping members, wherein at least one grasping member of the second plurality of grasping members is disposed between each two adjacent cavities of the second plurality of cavities.